

4A and 4C. Support for the amendment to published paragraph 0073 is found in the originally filed drawing of Fig. 4B. Support for the newly submitted paragraph following published paragraph 0077 is found in the originally filed drawings of Figs. 1 and 5 and originally filed published paragraphs 0045-0046. Support for the amendment to published paragraph 0078 is found in the originally filed drawing of Fig. 5 and in originally filed published paragraphs 0044 and 0081.

Support for the amendments to claims 1 and 7 adding the limitation --to a common output location-- is found in the originally filed drawings of Figs. 1 and 5. Support for the other amendments to claims 1 and 7 is found in originally filed published paragraphs 0071 - 0074.

It is therefore respectfully submitted that the above amendments introduce no new matter within the meaning of 35 U.S.C. § 132.

Objection to the Oath/Declaration

The Examiner object to the oath/declaration as being missing from the application.

RESPONSE

In a telephone interview with Applicant's representative, as reported in paper number 4, the Examiner indicated that upon

further search the oath/declaration had been found, thereby obviating the objection.

Accordingly, reconsideration and withdrawal of the objection is respectfully requested.

Objection to the Drawings

The Examiner objected to the drawings as not having reference numbers 14 and 31 mentioned in the specification; and for having reference numbers 41, 42, 43, 52b-f, 53a-f, 55a-f, 60, 61a, 62b, 63c and 64d not mentioned in the specification.

RESPONSE

With respect to reference number "14", specification paragraph 0044 has been amended to change "14" to --14a to 14f-- thereby obviating the objection.

With respect to reference number "31", applicant traverses the objection and respectfully submits that said reference number is shown in the originally filed drawing of Fig. 3.

With respect to reference numbers "41" and "43", specification paragraph 0071 has been amended to include said reference numbers thereby obviating the objections.

With respect to reference number "42", specification paragraph 0073 has been amended to include said reference number thereby obviating the objection.

With respect to reference numbers "60", "61a", "62b", "63c", and "64d", the newly submitted paragraph following paragraph 0077 includes said reference numbers thereby obviating the objections.

With respect to reference numbers "52b-f", "53a-f" and "55a-e", specification paragraph 0078 has been amended to include said reference numbers thereby obviating the objections.

Accordingly, reconsideration and withdrawal of the objections is respectfully requested.

Objection to the Specification

The Examiner objected to the specification due to minor grammar errors.

RESPONSE

Applicant thanks the examiner for the suggested grammatical corrections to the specification.

Paragraph 64 has been amended by this Response and Amendment in accordance with the Examiner's suggestion thereby obviating the objection.

Accordingly, reconsideration and withdrawal of the objection is respectfully requested.

Rejection under 35 U.S.C. § 103

The Examiner rejected claims 1-8, stating:

Okamura discloses with respect to claims 1 and 7,
a printing machine (see figure 1);
at least one paper feed unit (See figure 1,
references 5, 9, and 10);

a printed sheet transportation unit (See figure 1,
references 3 and 5);

an error detection unit/step (See figure 3,
references 100A; column 12, lines 48-55. Error is
represented by the ink quantity being below a
predetermined quantity);

at least one error with which printing can be
continued ("small quantity of ink") and at least one
error with which printing can't be continued ("no ink") -
See figure 3, references 112A, 112B; column 12, lines 7-
14. The storage device which serves to store an error
classified table is thus inherent to the invention);

and a control unit (See figure 3, reference 111;
column 12, lines 40-62. The dot count means determines
between the "small quantity of ink" and "no ink" errors).

Okamura discloses, with respect to claim 2, that the
control unit is capable of taking control of the printing
machine in order to continue the printing operation
without suspending the printing operation when the
control unit judges the occurrence of an error with which
the printing operation can be continued. Okamura teaches
that the control unit continues printing even when an ink
is reduced to a predetermined quantity or less (small
quantity), though the ink detection time is shortened
(See column 12, lines 55-62).

Okamura discloses, with respect to claims 3-8 that
the control unit is capable of reporting the result of
judgment (whether "small quantity" or "no ink") to the
user (See figure 3, column 12, lines 7-14). Hence, an
error reporting step is disclosed.

Okamura discloses, with respect to claims 5, 6, and
8 that the control unit is capable of reporting to the
user information of the penalty in through put when a
current error as detected is an error with which the
printing operation can be continued (where throughput
penalty is the amount of ink, or lack thereof, left
before the ink becomes empty. See column 15, lines 33-
36). Okamura teaches that "a user can visually confirm
a quantity of remaining ink at all times while preventing
an unexpected occurrence of malfunction of 'no ink'".
(See column 17, lines 28-32).

Okamura differs from the claimed invention in that
it does not disclose a plurality of image formation units
each of which serves to perform an printing operation on

a printing sheet.

Mitsuhisa discloses, with respect to claims 1-8, a plurality of image formation units (See figure 1 and English abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the plurality of image formation units disclosed by Mitsuhisa into the invention of Okamura in order to perform a printing operation on a printing sheet. The motivation for the skilled artisan in doing so is to gain the benefit of being able to perform high speed printing while suppressing cost increase incident to parallel operation.

RESPONSE

Claims 1 and 7 have been amended by this Response and Amendment to further differentiate the claimed invention over the cited prior art. As amended the rejections are respectfully traversed.

Applicant traverses the rejections because all three prongs for a *prima facie* case of obviousness have not been established for each of the rejections. Specifically, as amended all the claim limitations are not present in the cited references and one of ordinary skill in the art would have no motivation to modify the cited references into the present invention.

To establish a *prima facie* case of obviousness, the Examiner must establish: (1) that some suggestion or motivation to modify the references exists; (2) a reasonable expectation of success; and (3) that the prior art references teach or suggest all the claim limitations. Amgen, Inc. v. Chugai Pharm. Co., 18 USPQ2d 1016, 1023 (Fed. Cir. 1991); In re Fine, 5 USPQ2d 1596, 1598 (Fed. Cir.

1988); In re Wilson, 165 USPQ 494, 496 (C.C.P.A. 1970).

A *prima facie* case of obviousness must also include a showing of the reasons why it would be obvious to modify the references to produce the present invention. See Ex parte Clapp, 277 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). The Examiner bears the initial burden to provide some convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings. Id. at 974.

The present invention is related to an improved error handling scheme as combined with the provisions of a plurality of image formation units each of which serves to perform a printing operation on a printing sheet. Particularly, the improvement point resides in a control unit which serves to judge whether or not a current error as detected by the error detection unit is an error with which the printing operation of at least one of the image formation units can be continued or an error with which the printing operation of all of the image formation units can not be continued, as recited in the claims as herein amended. This judgment is not described in the cited references.

Claims 1, as amended, is directed to a printing machine apparatus having a plurality of image formation units each of which serves to perform a printing operation on a printing sheet. A paper feed unit serves to supply the image formation units with printing sheets. A printed sheet transportation unit serves to

transport the printing sheet having been printed from the image formation unit to a common output location. An error detection unit serves to detect an error occurring in the printing machine. A storage device serves to store an error classified table in which possible errors occurring in the printing machine are classified into at least one error with which the printing operation can be continued and at least one error with which the printing operation can not be continued. A control unit serves to judge whether or not a current error as detected by the error detection unit is an error with which the printing operation of at least one of the image formation units can be continued or an error with which the printing operation of all of the image formation units can not be continued.

Claim 7 has been similarly amended and now claims a method of reporting an error in the printing machine including an error detecting step of detecting an error which occurs in the printing machine; an error judging step of judging whether or not a current error as detected by the error detecting step is an error with which the printing operation of at least one of the image formation units can be continued or an error with which the printing operation of all of the image formation units can not be continued; and an error reporting step of reporting the error as detected in the error detecting step as well as information of whether or not the printing operation can be continued by the printing machine

with the error.

The Examiner asserts that the cited Okamura et al '634 patent discloses a printing machine having at least one paper feed unit; a printed sheet transportation unit; and an error detection unit/step. The Examiner asserts that "error is represented by the ink quantity being below a predetermined quantity".

Applicant respectfully submits that the Examiner is incorrect.

Applicant submits that the low quantity is not an error. To the contrary, on a low quantity condition the user is prompted to confirm a spare cartridge of ink which is instantly available. The Okamura et al. '634 patent does not disclose at least one error with which printing operation can be continued.

The advance notice of "a small quantity of ink remaining" is only a notice rather than an error. In most cases, the printing operation is continued even with the notice being displayed. In the case of the present invention, the ink errors do not include the low quantity status of ink.

Moreover, the Okamura '634 patent does not disclose a plurality of printing units as claimed in each of claims 1 and 7. Additionally, the Okamura patent does not disclose a printed sheet transportation unit that transports the printed printing sheets from the plurality of image formation units to a common output location, as similarly claimed in claims 1 and 7.

The cited Japanese '385 patent publication to Mitsuhsa

discloses a printing machine having a plurality of printing sections, each printing section having a print head. Each printing section has a unique corresponding ejected paper delivery means which feeds the printed print paper ejected from that respective printing section to an output location corresponding to that specific printing section.

However, the Mitsuhsa '385 patent publication does not disclose an ejected paper delivery means is configured to feed the printed print paper ejected from each of the plurality of printing sections to a common output location, as claimed in each of claims 1 and 7.

Neither the Okamura '634 nor the Mitsuhsa '385 patent publication disclose an ejected paper delivery means is configured to feed the printed print paper ejected from each of the plurality of printing sections to a common output location, as claimed in each of claims 1 and 7.

Thus, claims 1 and 7 are asserted to be patentable over the cited references. Claims 2-6, dependent from claim 1, and claim 8, dependent from claim 7, are asserted to be patentable over the cited references for at least the same reasons that claims 1 and 7 are patentable thereover.

Accordingly, reconsideration and withdrawal of the rejections is respectfully requested.

CONCLUSION


In light of the foregoing, Applicant submits that the application is in condition for allowance. If the Examiner believes the application is not in condition for allowance, Applicant respectfully requests that the Examiner contact the undersigned attorney if it is believed that such contact will expedite the prosecution of the application.

Respectfully submitted,

NATH & ASSOCIATES PLLC

Date: August 15, 2002

NATH & ASSOCIATES PLLC
1030 Fifteenth Street, N.W.
Sixth Floor
Washington, DC 20005
(202) 775-8383



Gary M. Nath
Registration No. 26,965
Harold L. Novick
Registration No. 26,011
Marvin C. Berkowitz
Registration No. 47,421

Attachment "A"

(Marked Up Copy of Amended Specification Paragraphs)

Please amend published paragraph 0044 as follows:

As illustrated in FIG.1, the printing machine in accordance with the embodiment is composed of a paper feed unit 11, a paper feed roller 12 for picking up a printing sheet from the paper feed unit 11, a transfer belt B 1 which is located over the paper feed unit 11, the paper feed roller 12 serving to feed the printing sheet to the transfer belt B1, the transfer belt B1 serving to upwardly transport the printing sheet as supplied from the paper feed roller 12, a plurality of image formation units A serving to print the visual information to be printed on a printing sheet in accordance with instructions given from a control unit 18 by driving [an] ink cartridges 14a to 14f, paper feed rollers 13a to 13f for selectively picking up a printing sheet by means of a separating hook and the like in order to feed the printing sheet as transported on the transfer belt to the corresponding image formation unit A, a transfer belt B2 provided in the opposition position to the transfer belt B1, sheet discharge rollers 15a to 15f serving to feed the printing sheet to the transfer belt B2, the transfer belt B2 serving to downwardly transport the printing sheet as supplied from the sheet discharge rollers 15a to 15f, a sheet discharge roller 16 serving to transport the printing sheet as discharged by the transfer belt B2 to a paper discharge unit 17 serving to receiving printing sheets on which is printed visual information to be printed.

Please amend published paragraph 0064 as follows:

The error detection units 35 [is] are provided with a reflection type or transmission type optical sensor implemented with a light beam transmitter/receiver in the vicinity of the paper feed roller or the sheet discharge roller, and serve[s] to detect an error detection signal and output an error detection signal to the CPU 30 when a printing sheet has been retained for a predetermined time period after detection of the printing sheet by the optical sensor and therefore an error is judged to occur.

Please amend published paragraph 0071 as follows:

First, when the error detection units 35 detect an error within the printing machine 10, the error detection units 35 serve to output the error detection result to the CPU 30. In response to the error detection result, the CPU 30 judges whether the current error is a printing operation continuable error or a printing operation halting error with reference to the error classified table stored in the ROM 34. Then, the judgment is displayed in an output screen as illustrated in output screen 41 shown in FIG.4A or output screen 43 shown in FIG.4C in order to report the judgment to the user. Meanwhile, in the case where the printing machine is used through the computer system, the report is output to the output device of the computer system such as a monitor. Then, when the judgment is output from the CPU 30, the user sees the information from the CPU 30 and, if the current error is a printing operation halting error, immediately goes to the setting location of the printing machine to recover the current error. On the other hand, if the current error is a printing operation continuable error, the control unit serves to take control of the printing machine to continue the printing operation. Accordingly, in this case, the user does not necessarily have to recover the error particularly in a hurry unless there is no any other reason but can go to the setting location of the printing machine after completion of the printing operation.

Please amend published paragraph 0073 as follows:

Meanwhile, the control unit can be designed to notify the user of the penalty in throughput when a printing operation continuable error occurs as illustrated in output screen 42 shown in FIG.4B. When the penalty in throughput is reported, it is also possible for the user to quantitatively determine whether or not immediate recovery of the error is more effective to complete the printing operation until a desired time with reference to the information about the penalty in throughput.

Please insert the following paragraph immediately following published paragraph 0077:

Similar to the embodiment shown in Fig. 1, in this embodiment of the present invention the printing machine 50 is electrically connected to a computer system 61a through a controller 63c. The controller 63c is electrically connected to the computer system 61a through a cable 62b. Also, the controller 63c is electrically connected to control unit 60 of printing machine 50 through a cable 64d.

Please amend published paragraph 0078 as follows:

Unlike the printing machine in accordance with the previous embodiment of the present invention, each image formation units A is provided with a separate paper feed unit 51a to 51f as illustrated in FIG.5 each having a corresponding paper feed roller 52a to 52f; and a corresponding ink cartridge 53a to 53f, respectively. Then, after image is printed on a printing sheet supplied from any one of the paper feed units 51a to 51f in the same manner as the printing machine in accordance with the previous embodiment of the present invention, the printing sheet is placed for a while on a corresponding one of stacking trays 54a to 54f. [, and then] Transfer rollers 55a to 55f transfer the printing sheet to corresponding collator units 56a to 56b which [serves to] gathers the printing sheets printed by the respective image formation units A in order to arrange and output them in a proper sequence on the paper discharge unit 59 by means of the sheet discharge rollers 57a to 57f and 58. In accordance with such a printing machine, since each image formation unit A is provided with a private collating function, a large number of copies of a large number of pages can be performed within a short time so that it is possible to significantly improve the printing speed of a vast amount of printing tasks.